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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/416,007	10/08/1999	LESLIE JAMES WILDING	19260-175/BS	5570

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EXAMINER	
WEST, LEWIS G	

ART UNIT	PAPER NUMBER
2682	14

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/416,007	WILDING, LESLIE JAMES	
	Examiner	Art Unit	
	Lewis G. West	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-14 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-14 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 October 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Arguments

1. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Specification

2. The abstract of the disclosure is objected to because it exceeds the 150 word maximum length and is not concise. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-4, 7-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuding (US 3,636,452) in view of Taira et al (US 5,659,886).

Regarding claim 1, Nuding discloses a system for coupling a base station transmitter and a base station receiver to an antenna (Figure 1, item A) for a radio system, comprising: an antenna for radiating transmit signals to and receiving receive signals (A); a plurality of receive branch networks (E1~En), coupled to the antenna via a receive path and to the base receiver (E1), each operative to select a frequency range of the receive signals for reception by the base station receiver and to pass the receive signals for processing by the remaining receive branch networks located in a downstream portion of the receive path (col. 2 lines 56-68); and a plurality of transmit branch networks, coupled to the antenna via a transmit path and to the base transmitter, each operative to select a frequency portion of the transmit signals transmitted by the base transmitter for forwarding to the antenna and to accept all transmit signals forwarded by the remaining transmit branch networks in a downstream portion of the transmit path for forwarding

to the antenna. (S1-Sn; col. 2 lines 33-55) and further comprising a bandpass filter, coupled between the antenna circulator and the receive path, for passing receive signals within a predetermined frequency range from the antenna circulator to the receive path while preventing the passage of transmit signals from the circulator to the receiver path. (Figure 1; col. 2 line 69-col. 3 line 29) Nuding does not expressly disclose an isolator coupled between the circulator and the transmit path in a CMRS system. Taira discloses an isolator, coupled between the antenna circulator and the transmit path, for passing transmit signals to the antenna circulator from the transmit path while preventing the passage of receive signal from the antenna to the transmit path in a commercial radio system. (Figure 1, 2, col. 2 lines 13-42) Therefore it would have been obvious to one of ordinary skill in the art in a commercial radio system, to use an isolator coupled between the circulator and the transmit path in order to prevent electrical interference from frequency signals received at the receiver which may cause noise,

Regarding claim 2, the combination of Nuding and Taira discloses the system of Claim 1, wherein each receive branch network comprises: a circulator, comprising a first port and a third port coupled to the receive path and a second port, operative to accept receive signals from an upstream portion of the receive path via the first port, to pass the receive signals via the second port to the third port and to the remaining receive branch networks located in the downstream portion of the receive path, and to output the receive signals via the second port; and a filter, coupled between the second port of the circulator and the base receiver, operative to accept the receive signals from the second port of the circulator and to select the frequency range of the receive signals for processing by the base receiver.(Figure 1; col. 2 lines 33-72)

Regarding claim 3, the combination of Nuding and Taira discloses the system of Claim 1, wherein each transmit branch network comprises: a filter, coupled to the base transmitter, operative to output filtered transmit signals in response to select the frequency portion of the transmit signal generated by the base transmitter; and a circulator, comprising a first port and a third port coupled to the transmit path and a second port coupled to the filter, operative to accept at the second port the filtered transmit signals for forwarding via the third port to an upstream portion of the transmit path and to accept at the first port the transmit signals output by remaining transmit branch networks located in the downstream portion of the transmit path for forwarding via the third port to the upstream portion of the transmit path. (Figure 1; col. 2 lines 33-72)

Regarding claim 4, the combination of Nuding and Taira discloses the system of Claim 1 further comprising an antenna circulator, coupled between the receive and transmit paths and to the antenna, for directing receive signals from the antenna to the receive path and transmit signals from the transmit path to the antenna. (Figure 1; col. 2-line 69-col. 3 line 2)

Regarding claim 9, the combination of Nuding and Taira discloses the system of Claim 2, wherein the filter of each receive branch network comprises a filtering characteristic selected from the group of bandpass, high pass and low pass filter characteristics. (Nuding: Col. 2 lines 33-72)

Regarding claim 11, the combination of Nuding and Taira discloses the system of Claim 3, wherein the filter of each transmit branch network comprises a filtering characteristic selected from the group of bandpass, high pass and low pass filter characteristics. (Nuding: Col. 2 lines 33-72)

Regarding claim 12, Nuding discloses a method for coupling a base station transmitter and a base station receiver to an antenna for a radio service system, the antenna coupled to a receive path comprising receive branch networks for processing receive signals and to a transmit path comprising transmit branch networks for processing transmit signals, comprising the steps: at each of the receive branch networks, selecting a frequency range of receive signals for reception by one of the base station receivers and passing the receive signals to the receive branch networks located in a downstream portion of the receive path for processing by the remaining base station receivers; and at each of the transmit branch networks, selecting a frequency portion of transmit signals transmitted by one of the base transmitters for forwarding to the antenna and accepting all transmit signals forwarded by the remaining transmit branch networks located in a downstream portion of the transmit path for forwarding to the antenna. Nuding does not expressly preventing received signals in the transmit path transmit path in a CMRS system. Taira discloses an isolator, coupled between the antenna circulator and the transmit path, for passing transmit signals to the antenna circulator from the transmit path while preventing the passage of receive signal from the antenna to the transmit path in a commercial radio system. (Figure 1, 2, col. 2 lines 13-42) Therefore it would have been obvious to one of ordinary skill in the art in a commercial radio system, to use an isolator coupled between the circulator and the transmit path in order to prevent electrical interference from frequency signals received at the receiver which may cause noise,

Regarding claim 13, Nuding discloses a system for coupling a base station transmitter and a base station receiver to an antenna for a radio system; a plurality of receive branch networks, coupled to the antenna via a receive path and to the base receiver, each comprising: a

circulator, comprising a first port and a third port coupled to the receive path and a second port, operative to accept receive signals from an upstream portion of the receive path via the first port, to pass the receive signals via the second port to the third port and to the remaining receive branch networks located in the downstream portion of the receive path, and to output the receive signals via the second port, and a filter, coupled between the second port of the circulator and the base receiver, operative to accept the receive signals from the second port of the circulator and to select a frequency range of the receive signals for processing by the base receiver; and a plurality of transmit branch networks, coupled to the antenna via a transmit path and to the base transmitter, each comprising: a filter, coupled to the base transmitter, operative to output filtered transmit signals in response to selecting a frequency portion of the transmit signal generated by the base transmitter, and a circulator, comprising a first port and a third port coupled to the transmit path and a second port coupled to the filter, operative to accept at the second port the filtered transmit signals for forwarding via the third port to an upstream portion of the transmit path and to accept at the first port the transmit signals output by remaining transmit branch networks located in the downstream portion of the transmit path for forwarding via the third port to the upstream portion of the transmit path. (Col. 2 lines 33-72; Fig.1) Nuding does not expressly disclose an isolator coupled between the circulator and the transmit path in a CMRS system. Taira discloses an isolator, coupled between the antenna circulator and the transmit path, for passing transmit signals to the antenna circulator from the transmit path while preventing the passage of receive signal from the antenna to the transmit path in a commercial radio system. (Figure 1, 2, col. 2 lines 13-42) Therefore it would have been obvious to one of ordinary skill in the art in a commercial radio system, to use an isolator coupled between the circulator and the

transmit path in order to prevent electrical interference from frequency signals received at the receiver which may cause noise,

Regarding claim 14, the combination of Nuding and Tara discloses the system of Claim 13 further comprising an antenna circulator, coupled between the receive and transmit paths and to the antenna, for directing receive signals from the antenna to the receive path and transmit signals from the transmit path to the antenna. (Figure 1; col. 2 line 69-col. 3 line 2)

Regarding claim 18, the combination of Nuding and Watanabe and Amoroso discloses the system of Claim 13, wherein the number of receive branch networks are equal to the number of transmit branch networks. (Nuding: Figure 1)

5. Claims 7, 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuding in view of Taira and further in view of Watanabe.

Regarding claim 7, the combination of Nuding and Taira discloses the system of Claim 1, but does not expressly disclose that the base receiver comprises a plurality of channel receivers, each allocated a unique frequency range and coupled to one of the receive branch networks for processing receive signals within the unique frequency range. Watanabe discloses the base receiver comprises a plurality of channel receivers, each allocated a unique frequency range and coupled to one of the receive branch networks for processing receive signals within the unique frequency range. (Watanabe, col. 5 lines 31-54; col. 6 line 57-col. 7 line 6) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a different frequency range in each receiver to promote faster switching.

Regarding claim 8, the combination of Nuding and Taira discloses the system of Claim 1, but does not expressly disclose that the base transmitter comprises a plurality of transmitters, each allocated a unique frequency range and coupled to one of the transmit branch networks for generating transmit signals within the unique frequency range. Watanabe discloses the base transmitter comprises a plurality of transmitters, each allocated a unique frequency range and coupled to one of the transmit branch networks for generating transmit signals within the unique frequency range. (Watanabe col. 5 lines 31-54) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a different frequency range in each receiver to promote faster switching.

Regarding claim 17, the combination of Nuding and Taira discloses the system of Claim 13, but does not expressly disclose that the base receiver comprises a plurality of channel receivers, each allocated a unique frequency range and coupled to one of the receive branch networks for processing receive signals within the unique frequency range; and the base transmitter comprises a plurality of transmitters, each allocated a unique frequency range and coupled to one of the transmit branch networks for generating transmit signals within the unique frequency range. (Watanabe, col. 5 lines 31-54; col. 6 line 57-col. 7 line 6) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a different frequency range in each receiver to promote faster switching.

6. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuding in view of Taira and further in view of Solondz (US 6,314,305).

Regarding claim 10, the combination of Nuding and Taira discloses the system of Claim 1, but does not disclose an unequal number of branches. Solondz discloses a transmitter receiver array wherein the number of receive branch networks is not equal to the number of transmit branch networks. (Figure 6; col. 1 lines 42-58) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use more transmit or more receive branches for the purpose of promoting diversity in transmission or reception, respectively.

Regarding claim 19, the combination of Nuding and Taira discloses the system of Claim 13, but does not disclose an unequal number of branches. Solondz discloses a transmitter receiver array wherein the number of receive branch networks is not equal to the number of transmit branch networks. (Figure 6; col. 1 lines 42-58) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use more transmit or more receive branches for the purpose of promoting diversity in transmission or reception, respectively.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Green, Jr (US 5,701,595) and Hikita et al (US 4,792,939) also show using an isolator to prevent unwanted signals in the transmit path.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis G. West whose telephone number is 703-308-9298. The examiner can normally be reached on Monday-Thursday 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

Lewis West
(703) 308-9298
November 5, 2003

VIVIAN CHIN
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